

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously presented) An organic light-emitting diode (OLED) device which produces white light, comprising:
 - a) an anode;
 - b) a hole-transporting layer disposed over the anode;
 - c) a blue light-emitting layer having a host doped with a blue light-emitting compound disposed directly on the hole-transporting layer and the blue light-emitting layer being doped with an electron-transporting or a hole-transporting material or both selected to improve efficiency and operational stability;
 - d) an electron-transporting layer disposed over the blue light-emitting layer;
 - e) a cathode disposed over the electron-transporting layer; and
 - f) the hole-transporting layer or electron-transporting layer, or both the hole-transporting layer and electron-transporting layer, being selectively doped with a compound which emits light in the yellow region of the spectrum which is included in an entire layer or a partial portion of a layer in contact with the blue light-emitting layer.
2. (Currently amended) The OLED device of claim 1 wherein hole-transporting or the electron-transporting material in the blue light-emitting layer is selected to be in a range of from .5 to 10 percent by volume of the host material and when both are used, they are selected to be in a range of from 1 to 20 percent by volume of the host material.
3. (Currently amended) The OLED device of claim 1 wherein the hole-transporting material in the blue light-emitting layer ~~are~~ is:
 - 1,1-Bis(4-di-*p*-tolylaminophenyl)cyclohexane;
 - 1,1-Bis(4-di-*p*-tolylaminophenyl)-4-phenylcyclohexane;
 - 4,4'-Bis(diphenylamino)quadriphenyl;
 - Bis(4-dimethylamino-2-methylphenyl)-phenylmethane;
 - N,N,N-Tri(*p*-tolyl)amine;
 - 4-(di-*p*-tolylamino)-4'-[4(di-*p*-tolylamino)-styryl]stilbene;
 - N,N,N',N'-Tetra-*p*-tolyl-4-4'-diaminobiphenyl;

N,N,N',N'-Tetraphenyl-4,4'-diaminobiphenyl;
 N,N,N',N'-tetra-1-naphthyl-4,4'-diaminobiphenyl;
 N,N,N',N'-tetra-2-naphthyl-4,4'-diaminobiphenyl;
 N-Phenylcarbazole;
 4,4'-Bis[N-(1-naphthyl)-N-phenylamino]biphenyl (NPB);
 4,4'-Bis[N-(1-naphthyl)-N-(2-naphthyl)amino]biphenyl (TNB);
 4,4''-Bis[N-(1-naphthyl)-N-phenylamino]p-terphenyl;
 4,4'-Bis[N-(2-naphthyl)-N-phenylamino]biphenyl;
 4,4'-Bis[N-(3-acenaphthenyl)-N-phenylamino]biphenyl;
 1,5-Bis[N-(1-naphthyl)-N-phenylamino]naphthalene;
 4,4'-Bis[N-(9-anthryl)-N-phenylamino]biphenyl;
 4,4''-Bis[N-(1-anthryl)-N-phenylamino]-p-terphenyl;
 4,4'-Bis[N-(2-phenanthryl)-N-phenylamino]biphenyl;
 4,4'-Bis[N-(8-fluoranthryl)-N-phenylamino]biphenyl;
 4,4'-Bis[N-(2-pyrenyl)-N-phenylamino]biphenyl;
 4,4'-Bis[N-(2-naphthacenyl)-N-phenylamino]biphenyl;
 4,4'-Bis[N-(2-perylenyl)-N-phenylamino]biphenyl;
 4,4'-Bis[N-(1-coronenyl)-N-phenylamino]biphenyl;
 2,6-Bis(di-p-tolylamino)naphthalene;
 2,6-Bis[di-(1-naphthyl)amino]naphthalene;
 2,6-Bis[N-(1-naphthyl)-N-(2-naphthyl)amino]naphthalene;
 N,N,N',N'-Tetra(2-naphthyl)-4,4''-diamino-p-terphenyl;
 4,4'-Bis{N-phenyl-N-[4-(1-naphthyl)-phenyl]amino}biphenyl;
 4,4'-Bis[N-phenyl-N-(2-pyrenyl)amino]biphenyl;
 2,6-Bis[N,N-di(2-naphthyl)amine]fluorene;
 1,5-Bis[N-(1-naphthyl)-N-phenylamino]naphthalene;
 4,4',4''-tris[(3-methylphenyl)phenylamino]triphenylamine (MTDATA); or
 4,4'-Bis[N-(3-methylphenyl)-N-phenylamino]biphenyl (TPD).

4. (Currently amended) The OLED device of claim 1
 wherein the electron-transporting materials in the blue light-emitting layer ~~is are~~:

Balq;
 Aluminum trisoxine [alias, tris(8-quinolinolato)aluminum(III)];
 Magnesium bisoxine [alias, bis(8-quinolinolato)magnesium(II)];
 Bis[benzo {f}-8-quinolinolato]zinc (II);

Bis(2-methyl-8-quinolinolato)aluminum(III)- μ -oxo-bis(2-methyl-8-quinolinolato) aluminum(III);

Indium trisoxine [alias, tris(8-quinolinolato)indium];

Aluminum tris(5-methyloxine) [alias, tris(5-methyl-8-quinolinolato)aluminum(III)];

Lithium oxine [alias, (8-quinolinolato)lithium(I)];

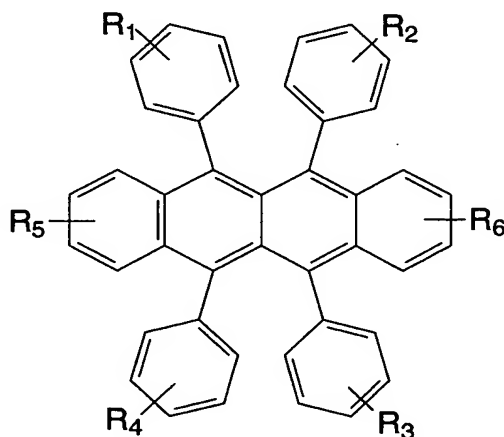
Gallium oxine [alias, tris(8-quinolinolato)gallium(III)]; or

Zirconium oxine [alias, tetra(8-quinolinolato)zirconium(IV)].

5. (Previously presented) The OLED device of claim 1 wherein the hole-transporting material is NPB and the electron-transporting material is Alq.

6. (Previously presented) The OLED device of claim 1 wherein the hole-transporting material is NPB and the electron-transporting material is BAlq.

7. (Original) The OLED device of claim 1 wherein the yellow light-emitting compound is:



wherein R₁, R₂, R₃, R₄, R₅, R₆ represent one or more substituents on each ring where each substituent is individually selected from the following groups:

Group 1: hydrogen, or alkyl of from 1 to 24 carbon atoms;

Group 2: aryl or substituted aryl of from 5 to 20 carbon atoms;

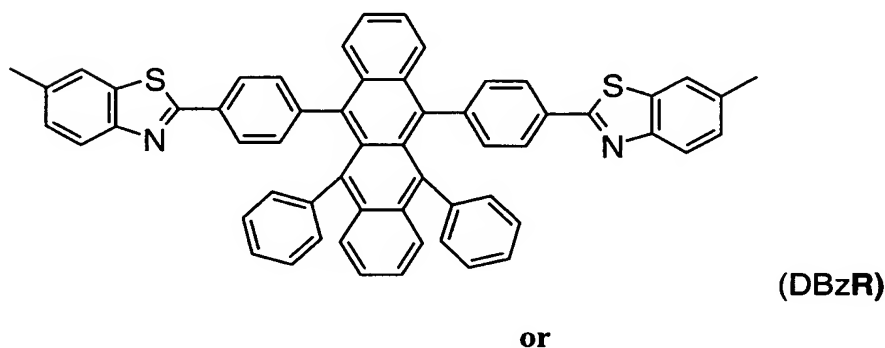
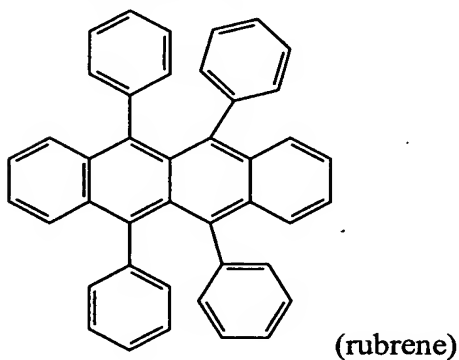
Group 3: carbon atoms from 4 to 24 necessary to complete a fused aromatic ring of phenyl, naphthyl, anthracenyl, phenanthryl, pyrenyl, or perylenyl;

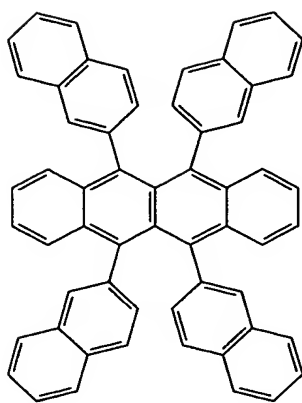
Group 4: heteroaryl or substituted heteroaryl of from 5 to 24 carbon atoms such as thiazolyl, furyl, thienyl, pyridyl, quinolinyl or other heterocyclic systems, which may be bonded via a single bond, or may complete a fused heteroaromatic ring system;

Group 5: alkoxyamino, alkylamino, or arylamino of from 1 to 24 carbon atoms; or

Group 6: fluorine, chlorine, bromine or cyano.

8. (Original) The OLED device of claim 6 wherein the yellow-emitting dopants includes 5,6,11,12-tetraphenylnaphthacene (rubrene); 6,11-diphenyl-5,12-bis(4-(6-methyl-benzothiazol-2-yl)phenyl)naphthacene (DBzR) or 5,6,11,12-tetra(2-naphthyl)naphthacene (NR), the formulas of which are shown below:





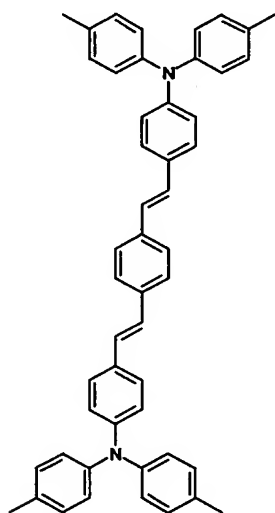
(NR).

9. (Cancelled)

10. (Cancelled)

11. (Previously presented) The OLED device of claim 1

wherein the blue light emitting compound includes distyrylamine derivatives as shown by the formula



12. (Previously presented) The OLED device of claim 1

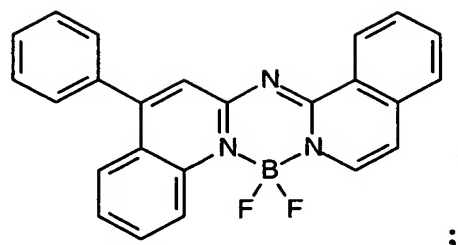
wherein the blue light emitting compound dopant further includes perylene and its derivatives.

13. (Original) The OLED device of claim 12 wherein the perylene derivative is 2,5,8,11-tetra-tert-butyl perylene (TBP).

14. (Previously presented) The OLED device of claim 1

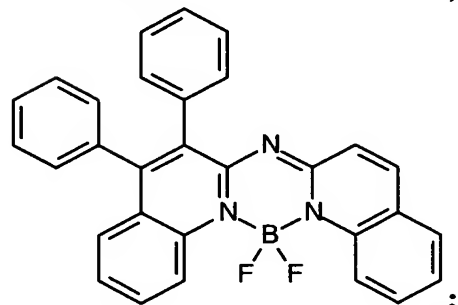
wherein the blue light emitting compound is represented by the following formulas:

B-2



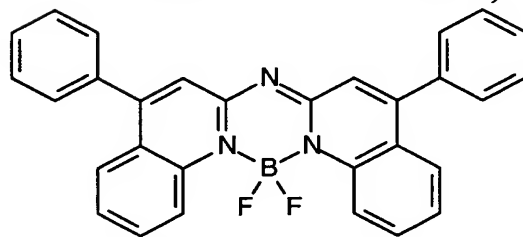
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B-3



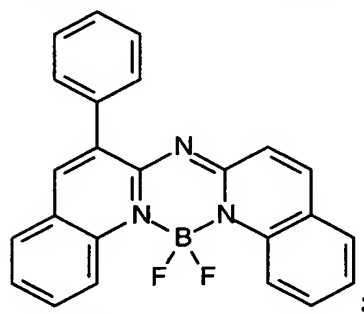
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B-4



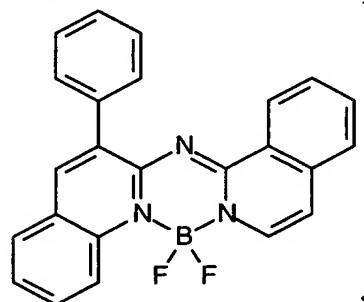
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B-5



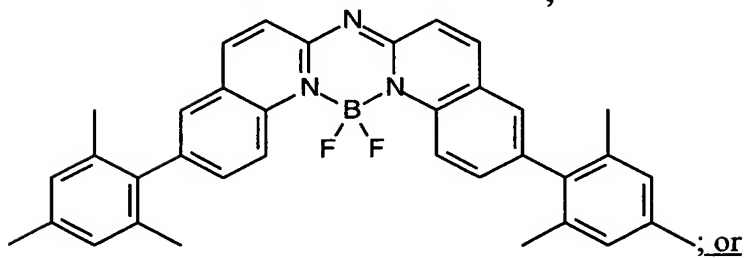
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B-6

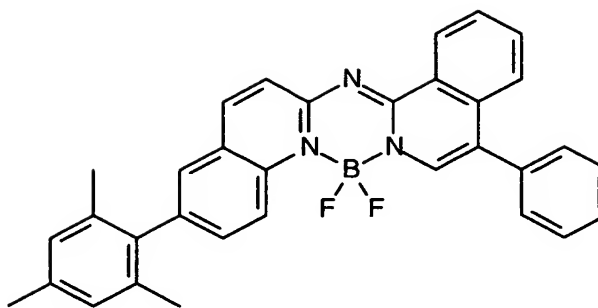


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B-8



15. (Original) The OLED device of claim 1 wherein the concentration of blue emitting dopants, is in the range of greater than 0 and less than 10% percent by volume of the host material.

16. (Original) The OLED device of claim 1 wherein thickness of the hole-transporting layer is between 5 nm-300 nm.

17. (Original) The OLED device of claim 1 wherein the hole-transporting layer includes two or more sublayers, the sublayer closest to the blue light-emitting layer being doped with yellow-emitting dopants.

18. (Original) The OLED device of claim 17 wherein the dopant in the hole transport material is 5,6,11,12-tetraphenyl-naphthacene (rubrene); 6,11-diphenyl-5,12-bis(4-(6-methyl-benzothiazol-2-yl)phenyl)naphthacene (DBzR); or 5,6,11,12-tetra(2-naphthyl)naphthacene (NR), and the thickness of the layer containing yellow dopant is in a range between 1 nm-300 nm.

19. (Original) The OLED device of claim 1 wherein thickness of the blue light-emitting layer is in a range between 5 nm-100 nm.

20. (Original) The OLED device of claim 1 wherein a hole-injecting layer is provided between the anode and the hole-transporting layer.

21. (Original) The OLED device of claim 20 wherein the hole-injecting layer comprises CF_x, CuPC, or m-MTDATA.

22. (Previously presented) The OLED device of claim 20 wherein the thickness of the hole injecting layer is 0.1 nm-100 nm.

23. (Previously presented) The OLED device of claim 1 wherein the thickness of the electron-transporting layer is in a range between 5 nm-150 nm.

24. (Original) The OLED device of claim 1 wherein the cathode is selected from the group consisting of LiF/Al, Mg:Ag alloy, Al-Li alloy, and Mg-Al alloy.

25. (Original) The OLED device of claim 1 wherein the cathode is transparent.

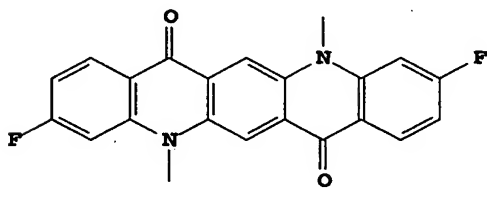
26. (Original) The OLED device of claim 1 wherein the electron-transporting layer is transparent.

27. (Original) The organic light-emitting diode (OLED) device of claim 1 wherein the electron-transporting layer is doped with a green light-emitting dopant or a combination of green and yellow light-emitting dopants.

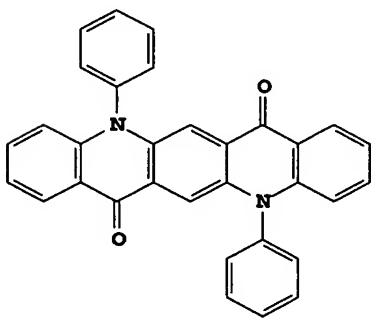
28. (Original) The OLED device of claim 27 wherein of the green dopant in the electron-transporting layer includes a coumarin compound.

29. (Original) The OLED device of claim 28 wherein the coumarin compound includes C545T or C545TB.

30. (Previously presented) The OLED device of claim 27 wherein the green light-emitting dopant is selected from the group consisting of:

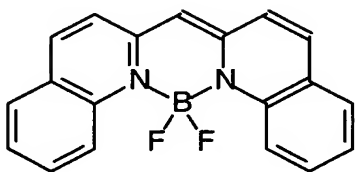


G-1_a

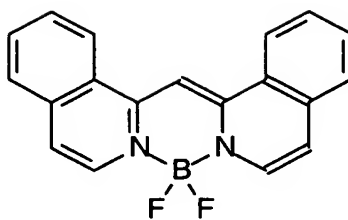


G-2_a

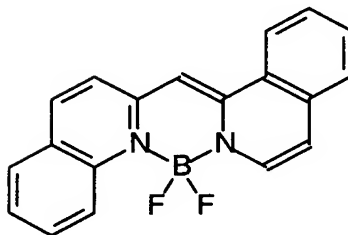
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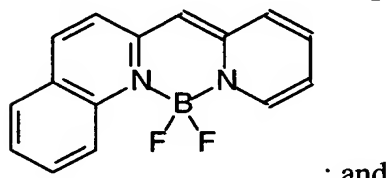
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G-5

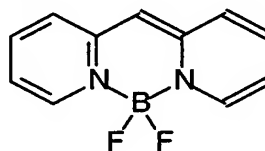


G-6



; and

G-7



31. (Previously presented) The OLED device of claim 27 wherein green dopant concentration is between 0.1-5% percent by volume of the electron transport material in the electron transporting layer.

32. (Previously presented) The OLED device of claim 1 further including a buffer layer disposed on the cathode layer.

33. (Original) The OLED device of claim 32 wherein thickness of the buffer layer is in a range between 1 nm-1000 nm.

34. (Previously presented) The OLED device of claim 1 further including a color filter array .

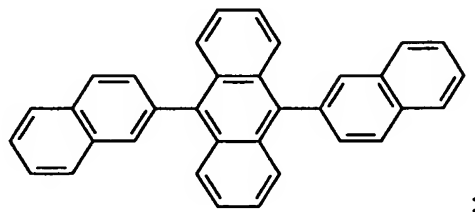
35. Cancelled.

36. Cancelled.

37. (Original) The OLED device of claim 1 wherein the hole-transporting layer includes an aromatic tertiary amine.

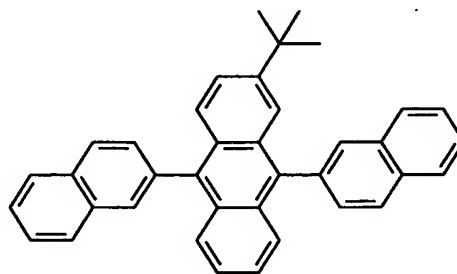
38. (Original) The OLED device of claim 1 wherein the electron-transporting layer includes copper phthalocyanine compound.

39. (Previously presented) The OLED device of claim 1 wherein the blue light-emitting layer includes host material selected from the group consisting of:

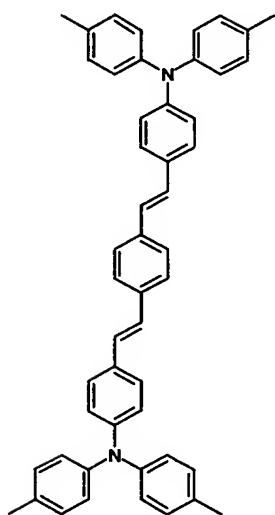


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and

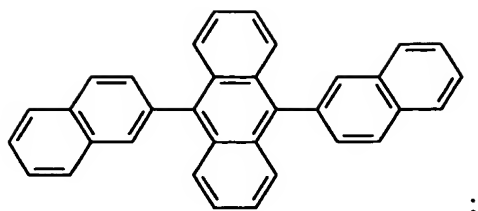


; and wherein the blue light-emitting dopant includes



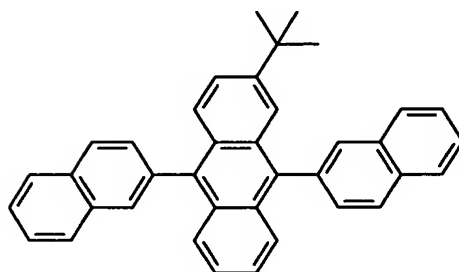
or derivatives thereof.

40. (Previously presented) The OLED device of claim 3 wherein the blue light-emitting layer includes host material selected from the group consisting of:

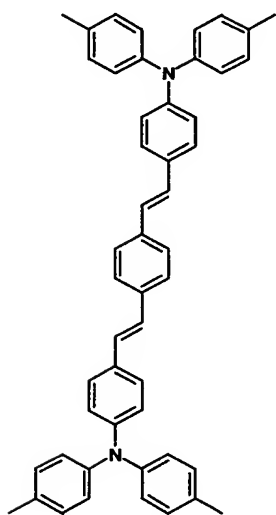


;

and



; and wherein the blue light-emitting dopant includes



or derivatives thereof.